

ABSTRACT OF THE DISCLOSURE

5 The present invention focuses on the aggregation of flows belonging to different classes
of non-guaranteed-delay traffic into a single FIFO queue in a downstream stage of the multi-
stage switch. These include the guaranteed flows requiring bandwidth reservation, the best-effort
flows that require a fair share of the excess bandwidth, and the flows that require both types of
guarantee. We disclose a credit-based backpressure scheme which selectively controls the traffic
10 originating from the previous stage of the system while achieving the goal of meeting the
requirements of the individual flows. The credit function is maintained for each controlled traffic
component in the aggregate session, and its objective is to balance the actual arrival rate of the
component with the service rate dynamically granted by the downstream scheduler. The number
of flows that can be aggregated is related to the complexity of maintaining the credit functions
for the different traffic components.

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